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## MEMORANDUM.

*In reference to a Scheme for completing a  
great Inter-Colonial and Inter-Continental  
Telegraph System, by establishing an  
Electric Cable across the Pacific Ocean.*

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1893



## MEMORANDUM

*In reference to a Scheme for completing a great Inter-Colonial and Inter-Continental Telegraph System, by establishing an Electric Cable across the Pacific Ocean.*

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The project of connecting England telegraphically with all her great Colonial possessions around the globe, by means of a line through Canada, and thence by a Submarine Telegraph to Asia, is discussed by the undersigned, as Engineer-in-Chief of the Canadian Pacific Railway, in his report for the year 1880, as follows:—

The Land Telegraph completed through Canada, and in operation from Ocean to Ocean, opens up a prospect of extended usefulness, and promises advantages which do not alone concern Canada.

A map of the world, setting forth the great Telegraph lines in operation, shows that Canada is situated midway between the masses of population in Europe and Asia, and establishes the peculiarly important geographical position which the Canadian Overland Telegraph Line will occupy.

Seven submarine Cables have been laid across the Atlantic, of which two are not now in working order. Of the remainder, three are landed on the shores of Canada.\*

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\* Since the above was written, additional Cables have been laid, and there are at the present time six Cables in working order from the United Kingdom to British North America.

England is connected with Asia by four main Telegraph lines. One by way of Portugal, Spain, Malta, Egypt and the Red Sea. A second passing through France, Italy and Greece also follows the Red Sea. A third traverses Germany, Austria, Turkey, Russia and Persia. A fourth passes through Russia, and follows the River Amoor to the Sea of Ookhotsh. The two first touch at Aden at the entrance of the Red Sea, from which point a submarine line extends to Zanzibar, Natal and the Cape Colonies. From Aden the main lines are extended to India. From India two separate lines have been carried to Singapore. From Singapore connections are established north-easterly to Hong Kong and Japan, and south-easterly to Australia and New Zealand. The rapidity with which the Telegraph Cables across the Atlantic have been multiplied, and the construction of more than 400,000 miles of land and submarine Telegraphs over the globe, affords evidence of the work which they are called upon to perform. The few years in which these results have been attained indicate the rapidly-growing magnitude of Telegraphic traffic, and circumstances conclusively point to a demand for vastly-increased facilities of communication between the great centres of population and commerce of the world.

While on the one hand, the Telegraph has extended easterly across Europe and Asia, and, on the other hand, westerly across the Atlantic, the Pacific Ocean remains untraversed. The explanation may lie to a great extent in the fact that the character of the bed of a great part of the ocean forbids the attempt. In more southern latitudes the great central area of the Pacific Ocean is marked by sub-aqueous rocky ledges and coral reefs, the existence of which has deterred any telegraphic enterprise from being carried out. Submarine Cables have at different times been projected to cross the Pacific, one of which was to have



started from San Francisco to touch at the Sandwich Islands, but on account of the broken and unsuitable character of the ocean bed, the project, after considerable expense had been incurred, was eventually abandoned.

The chart of the United States Surveys (1877) of the northern part of the Pacific Ocean, shows that a line from the north end of Vancouver's Island to the Aleutian Islands, and from the Aleutian Islands to Japan, *via* the Kurile Islands, has a depth averaging from 2,000 to 2,500 fathoms, and the soundings reveal a soft, oozy bottom, presenting similar conditions to the North Atlantic Ocean, on the plateau of which cables have been successfully laid.

From her geographical position, Canada presents unusual facilities for taking advantage of these favorable conditions, and the belief is warranted that when a submarine Telegraph is laid from America to Asia, its location will naturally be in connection with the Canada Overland Telegraph to the Pacific coast.

The Cable may start from one of the deep-water inlets at the north end of Vancouver's Island, and be sunk in a direct course to Japan, or it may touch, about midway, Amliia, one of the Aleutian Islands. At Yesso, in Japan, the connection would be made with the Asiatic Telegraphs. As an alternative route the submarine line may land on one of the Kurile Islands, north of Japan, and thence extend direct to Hong Kong. Either course would complete the connection with the whole Eastern Telegraph system, and effect important results.

1. It would connect San Francisco, Chicago, Toronto, New York, Montreal, Boston, and all the great business centres of America, with China and the principal ports of Asia, much more directly than by the present lines of telegraph by way of Europe.

2. It would open a new means of communication between

America and Asia, to be employed for purposes of general commerce, at much lower rates than by existing channels.

3. It would obviate the objections to lines which pass through countries where different languages are spoken, a circumstance which often causes error in the transmission of messages. The new line will be employed for the most part by the English-speaking people of both hemispheres, and consequently, one language only need be used by the Telegraph operators. Thus a fruitful source of mistakes would be avoided, and the charges for transmission would be freed from all incidental additions, and reduced to the lowest remunerative rates.

4. It would complete the telegraphic circuit of the globe, and would be available for highly important scientific investigations.

5. It would bring Great Britain, Canada, India, Australia, New Zealand, South Africa, indeed all the outer provinces and the Colonial possessions of Great Britain, in unbroken telegraphic communication with each other, in entire independence of the lines which pass through foreign European countries.

6. It would scarcely fail to prove of very great advantage for purposes of State, as the line might be so established as to remain under Government control, to be immediately serviceable on any emergency.

The Government of Canada has given its full consideration to the project, and has passed certain Orders in Council, granting important concessions, and has promised every assistance in its power to carry out the undertaking. Correspondence has at various times passed between His Excellency the Governor-General of Canada and the Secretary of State for the Colonies on the subject.

Through the intervention of the Imperial Government the Japanese Government has granted permission to land the Cable at a suitable point on the coast of Japan.

The Government of the United States has also given permission to land the Cable on one of the Aleutian Islands, and to use the Island as a mid-station.

The Parliament of Canada has authorized the Canadian Government to incorporate the undersigned, and such persons as may be associated with him, as a company for the purpose of carrying out the undertaking.

The importance of the scheme has from the first been recognised. The recent Egyptian War has established the necessity of carrying it into execution with as little delay as practicable. For a period last summer there was a complete interruption to postal and telegraph service through Egypt, with India, China, Australia, South Africa, and the East. The war was happily brief, and this interruption to these services between England and her Eastern possessions was terminated by a brilliant campaign. The interruption, however, was of value, as it confirmed the soundness of the views of General Lord Wolseley on the question of communication with the East. Not long since, that distinguished authority, publicly expressed his conviction that it would be unwise and suicidal to depend on the existing telegraph system as a means of communication with our Eastern possessions. All far-seeing men, who, like Lord Wolseley, consider the question, must attach the utmost importance to this proposal to establish a telegraphic communication through the Dominion of Canada with the Eastern Empire.

Last summer, when the two Cables in the Red Sea, and from the Red Sea to Bombay, were rendered entirely useless, the only means of communication was by the line passing through Germany, Russia, and Persia. It is not difficult to judge how far that line could be relied on in the event of a general, or even a partial Mahometan rising, or any European complication whatever.

It is held that the projected submarine telegraph across the Pacific Ocean, from the western coast of Canada, would accomplish the following objects:—

1. It would establish the link at present wanting to complete an unbroken chain of Electric Telegraphs to connect Great Britain and her Dominions in every quarter of the globe, *without passing through or approaching Europe or the Mediterranean.*

2. In connection with the vitally important question, "The Defence of the Empire," it would establish an alternative means of communication between London and Asia, Australia, and South Africa. It would form a telegraphic connection between England, the Indian Empire, and Eastern possessions, independent of existing lines, all of which pass through foreign countries, Russian, or Mahometan. Countries, which are not always friendly, and which are liable at any time to become hostile.

3. It would promote Colonial intercourse with the mother country, and assist in developing and facilitating general commerce.

4. It would advance the general interests of Canada, by directly connecting the Dominion, telegraphically, with all the other great British possessions in both hemispheres.



5. It would assist in bringing into prominence portions of the British Dominions, embracing Vancouver's Island and British Columbia, which, for all practical purposes are at the present time the most distant of our Colonial possessions.

6. There cannot be a doubt that the projected undertaking would materially serve the interests of British commerce.

7. Whatever complications may arise in Europe, or whatever might be going on around the Mediterranean, it would unquestionably secure the safety and certainty of telegraphic connections between the mother country and every one of her great possessions.

In view of the foregoing considerations, it may be assumed that the Imperial Government would desire to see the telegraph established.

It has been found that ordinary mercantile telegraphic business is not sufficient, at the present time, to induce capitalists to take up the project, purely as a commercial enterprise. Assistance, for a limited period is therefore required.

The Canadian Government is deeply interested in the success of the scheme, and has undertaken to facilitate its establishment and give every assistance in its power.\*

The Japanese Government being also interested, it is believed, will readily facilitate the carrying out of the project, and it is reasonable to expect, will assist financially to a moderate extent.

If one of the Aleutian Islands be adopted as a mid-station for the Cable, the enterprise would benefit the

\* Vide Appendix, 1, 2, 3, & 4.

United States by supplying telegraphic service with the territory of Alaska. There are good grounds for expecting that the Government of the United States will offer a small subsidy for this service.

But it is obvious from what has been set forth, that in the general interests of the Empire, Her Majesty's Government is more deeply interested than any other in the success of the scheme. It is not unreasonable to hope, therefore, that in accordance with the policy adopted with respect to other lines of Electric Cable, the Government of Great Britain will be disposed to assist in this instance. Assistance will only be required until mercantile and ordinary traffic be developed to such an extent as to render the work self-sustaining.

Assistance may take the form of a guarantee of Government telegraphic business, or its equivalent value in a subsidy, for a fixed term of years. Assuming that a subsidy be given, it might be arranged that all Government messages be carried at agreed rates in reduction of the amount of subsidy, until it be extinguished.

Such an arrangement, together with assistance from the other governments mentioned, would be a security against loss, and would form a basis for raising the capital necessary to establish the line in a satisfactory manner.

All available information has been obtained with respect to depth of water, character of the bottom, and landing places, and it is believed that the proposed route is the shortest and best, if not the only practicable

general route for laying a cable across the Pacific.\* The total distance on the great circle, from the point on Vancouver Island at which it is intended to start to the proposed landing-place in Yesso, is 3,622 nautical miles, divided into two spans by landing on one of the Aleutian Islands. With the necessary allowance for slack of 20 per cent., the length of cable would be about 4,400 miles. The cost has been variously estimated at from £1,250,000 to £1,750,000.

It is evident that the whole outlay would scarcely exceed the cost of a single iron-clad ship of war, and comparatively small assistance from the Government would enable a company to establish a work which would add incalculable strength to Great Britain as a great naval power.

SANDFORD FLEMING.

EMPIRE CLUB, GRAFTON STREET,  
LONDON, *November 20, 1882.*

## DOCUMENTS APPENDED.

1. Minute of the Privy Council of Canada, dated 17th June, 1880.
2. " " " " " 7th July, 1880.
3. " " " " " 8th Dec., 1880.
4. " " " " " 26th July, 1882.
5. Report of Commander Hull, R.N., on the proposed Route of the Cable across the Pacific Ocean.
6. List of Official Documents, in reference to the Scheme, submitted to the Parliament of Canada, 29th February, 1882.

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\* *Vide* Appendix No. 5. Nautical Report by Commander Hull, R.N.

## APPENDIX No. 1.

MINUTE OF THE PRIVY COUNCIL OF CANADA, DATED 17TH  
JUNE, 1880.

*Copy of a Report of a Committee of the Honorable the  
Privy Council, approved by His Excellency the Governor-  
General in Council, on the 17th June, 1880.*

On a memorandum dated 20th May, 1880, from the Honorable the Minister of Railways and Canals, representing that a proposition has been received from Mr. Sandford Fleming, having in view the extension of the Pacific Railway Telegraph to Asia by submarine cable.

That the scheme which has been treated at length by Mr. Fleming, in his last report as Engineer-in-Chief of the Canadian Pacific Railway, comprises the formation of a Company, and the grant of certain concessions on the part of the Canadian Government, namely:—

1st. The exclusive privilege of landing a submarine cable on the Pacific coast of Canada.

2nd. The privilege of placing a wire for cable business on the posts of the Pacific Railway when erected, and that Mr. Fleming requests that these concessions may be made to himself individually as an initiatory step.

That the report of the Chief Engineer of Government Railways in operation holds that great advantage would accrue to Canada, through the carrying out of this scheme.

The Minister accordingly, upon such report and the advice therein contained, recommends that the concessions stated be granted to Mr. Fleming, upon the following conditions:—

1st. That a substantial commencement of the work be made within three (3) years, and that the cable be laid across the Pacific Ocean within five (5) years from the date of the completion of the overland lines.

2nd. That after the cable connection is made the submarine telegraph be satisfactorily maintained for purposes of traffic, and be operated efficiently.

3rd. That unless otherwise authorised by the Governor-General in Council, the maximum rates of charges be not higher than those mentioned in Appendix No. 24 of the Canadian Pacific Railway Report of 1880, above referred to.

4th. That the Government reserve the right to take possession of the whole at any time after completion, upon payment of a sum equal to the capital expended, together with a reasonable percentage added.

5th. That the suggested terms of arrangements be subject to the approval of Parliament.

The Committee submit the above recommendation for Your Excellency's approval.

Certified J. O. COTE, *Clerk, P.C.*

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## APPENDIX No. 2.

MINUTE OF THE PRIVY COUNCIL OF CANADA, DATED  
7TH JULY, 1880.

*COPY of a Report of a Committee of the Honorable the Privy Council, approved by His Excellency the Governor-General in Council, on the 7th July, 1880.*

On a memorandum dated 2nd July, 1880, from the Honorable the Minister of Public Works, submitting that the accompanying memorial has been addressed to His Excellency the Governor-General by S. Fleming, C.M.G., Civil Engineer, respecting a projected scheme to connect the Atlantic Telegraph system with that of Asia, by means of an overland line through the Dominion of Canada and an electric cable across the Pacific Ocean.



That, as an initiatory step, the Canadian Government, by an Order in Council, dated 17th June, 1880, has conceded to Mr. Fleming, on certain conditions, the exclusive privilege of landing a submarine cable on the Pacific coast of the Dominion, and the placing of a wire for cable business on the line of the Canadian Pacific Railway. That Mr. Fleming, in his memorial, states that it will not be possible to take any practical step for the commencement of that undertaking, until the spot for landing the Cable has been definitely secured, and he therefore solicits the intervention of His Excellency the Governor-General, with the Imperial Government, to open negotiations with the Japanese Government either for the transfer of one of the smaller islands of the Kurile group to the British Crown, or for securing the landing privileges necessary for the success of the undertaking.

That the project of Mr. Fleming is one deserving serious consideration.

The Minister, therefore, recommends that His Excellency the Governor-General may be pleased to cause a copy of the memorial in question, and of the other documents accompanying it, to be transmitted to the Imperial Government for their favorable consideration.

The Committee submit the above recommendation for your Excellency's approval, and further recommend that Sir A. T. Galt be instructed to communicate with the Colonial Minister on the subject.

( *Certified* )      J. O. COTE, *Clerk, P.C.*

*The Hon. Minister of Public Works.*

## APPENDIX No. 3.

MINUTE OF THE PRIVY COUNCIL OF CANADA, DATED  
8TH DECEMBER, 1880.

*COPY of a Report of a Committee of the Honorable the Privy Council, approved by His Excellency the Governor-General in Council, on the 8th December, 1880.*

On a Report, dated 6th December, 1880, from the Hon. the Minister of Public Works, stating that a memorial addressed to His Excellency the Governor-General by Mr. Sandford Fleming, has been referred to him through the Hon. the Secretary of State.

That the said memorial sets forth that by an Order in Council dated the 17th June, 1880, certain concessions were granted to the memorialist having in view the promotion of the establishment of electric cable communication between British Columbia and Asia.

That it is represented that steps are now being taken by the Imperial Government in order to the obtaining of permission to land a cable upon the shores of Japan, and that prior to the introduction of the scheme to the notice of capitalists, it is advisable that more detailed information than is at present possessed should be obtained respecting the waters through which the cable should be laid, and the shores whereon its landing may be effected.

That Mr. Fleming suggests, that in order to avoid the heavy expense which would be entailed by the sending out of a special vessel for this purpose, permission might be sought from the Imperial Government whereby the services of one of Her Majesty's ships stationed in the North Pacific waters may be utilized through the extension of one of her ordinary cruises, for the obtaining of the information required.

Concurring in the views expressed by Mr. Fleming, and believing the object to be one of much importance, the Minister recommends that the necessary steps be taken for the submission to the Imperial Government of a request on the part of this Government that the services of one of Her Majesty's ships may be conceded for the purposes indicated.

The Committee concur in the foregoing recommendation and submit the same for Your Excellency's approval.

Certified, J. O. COTE, *Clerk P.C.*

*Hon. Minister of Public Works.*

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#### APPENDIX No. 4.

MINUTE OF THE PRIVY COUNCIL OF CANADA, DATED  
26TH JULY, 1882.

*COPY of a Report of a Committee of the Honorable the Privy Council for Canada, approved by His Excellency the Governor-General in Council on the 26th July, 1882.*

On a Report, dated 21st July, 1882, from the Minister of Public Works, stating that Mr. Sandford Fleming represents that in consequence of the war cloud over Egypt a most opportune time has arrived for promoting the Asiatic Cable Scheme for which he obtained a Charter from Parliament. That at any moment the telegraph by the Red Sea may be cut, and traffic and intercourse completely interrupted between England and her Eastern possessions, which evidently shows the necessity of an independent means of communication with India, Australia, &c., one that could be relied on whatever might occur in Europe or in the Mediterranean.

The Minister states that Mr. Fleming also represents that a telegraph from Canada across the Pacific Ocean could not

but be of immense value, not only to commerce but in the vitally important question "The Defence of the Empire," and with this view he intends to bring his scheme to the notice of the Imperial Government.

That, inasmuch as this country, not only as a part of the Empire, but also as the Dominion of Canada, is interested in the success of the scheme, and in order to promote the object in view, the Minister recommends that the Secretary of State be informed that Mr. Fleming is a gentleman of high standing and respectability, and that full confidence may be placed in his integrity and entire disposition to carry into effect any undertaking into which he may enter.

The Committee concur in the recommendation of the Minister of Public Works, and they advise that a copy of this Minute when approved be transmitted for the information of Her Majesty's Government.

JOHN J. MCGEE,

*Clerk, Privy Council of Canada.*

#### APPENDIX No. 5.

NAUTICAL REPORT ON THE PROPOSED ROUTE OF THE CABLE,  
BY COMMANDER HULL, R.N.

*Remarks upon a proposed line of Telegraph Cable to be laid from  
Vancouver's Island in British Colombia, to Yezo Island in Japan.*

B Barclay Sound, in Vancouver's Island, and Akishi Bay, in Yezo, may be taken as two eligible ports for the termini.

B Barclay Sound is in lat. 48° 48' N. long. 125° 13' W. Akishi Bay is in lat. 43° 2' N. long. 144° 52' E. The length of an arc of a great circle between these ports is therefore 3,543 nautical miles.

This arc, entering the Aleutian group, near the northern end of Unalashka Island, passes north of the chain, and re-enters the Pacific Ocean just south of the Island of Agattu.

Deep sea soundings have been taken in the vicinity of this arc, by the United States Government, and it is from these soundings that the sections have been drawn.

Captain's Bay, in Unalashka Island, in which is situated the town of Iliuliuk, and Kyska Harbour in the Island of Kyska, appear to invite attention for the establishment of an intermediate station.

Between Iliuliuk and Kyska Harbour the soundings were obtained southward of the great circle along the northern shore of the Aleutian Islands.

The distances of the proposed track for the cable are

|                                      |       |                |
|--------------------------------------|-------|----------------|
| from Barclay Sound to Iliuliuk       | ..    | 1,602 miles.   |
| Iliuliuk to Kyska Harbour            | .. .. | 590 ..         |
| Kyska Harbour to Akishi Bay          | ..    | 1,430 ..       |
|                                      |       | <hr/> 3,622 .. |
| If taken on to Hakodadi (see page 20 |       |                |
| of this report), add .. ..           |       | 212 ..         |
|                                      |       | <hr/> 3,834 .. |
|                                      |       | <hr/>          |

Leaving Toquart Harbour in the north-west part of Barclay Sound, the cable might pass through the western channel to the sea, over an average soft bottom, in depths of 25 fathoms.

The first of the deep sea soundings will be met with about 60 miles W.N.W. (true) of the entrance to Barclay Sound.

In the first section drawn on North Pacific Chart, No. 787, the cable will lie over a soft and level bottom, in depths of from about 1,000 to 2,500 fathoms, to the meridian

of 154° W., after which the ocean deepens to 2,910 fathoms; the cable has here been taken to the northward to endeavour to avoid the deep water, 3,359 fathoms to the south-east of the Shoumagin Islands. After passing the meridian of these islands it has been drawn to the southward, so as to avoid the rough ground at the entrance of the Unimak Pass.

Captain's Bay on the northern end of Unalashka Island appears to offer many advantages for an intermediate station. The town of Iliuliuk is in this bay, and it has been used as the headquarters of the United States Coast Survey Party under W. H. Dall. There are eight villages in Unalashka, of which Iliuliuk is the chief. In 1867 there were 570 people living on the island, of which 309 resided at Iliuliuk.

In Mr. Dall's report, Ulakhta Harbour, known as Dutch Bay, is spoken of as having good holding ground in soft black mud and shell in 14 to 16 fathoms.

The prevalent winds in winter are south-east, and bring rain and fog. North-east winds bring clear weather, and north and north-west, snow. The heaviest gales are said to come from the south-west. The winds generally veer from east to south and west. Squalls blow with considerable force. Skim ice, destructive to boats, will form on a calm winter's night, but it is broken up by the first breeze. No ice obstructs the entrance to Captain's Bay. Earthquakes are said to be frequently experienced.

A southerly current appears to set constantly along the coast of the Alaska peninsula with a velocity of about one mile an hour, but it runs with more force through the Akutan and Unalga passes. To the northward of the Aleutians the current is said to set to the westward.

Westward of Unalashka is the volcanic island of Bogoslov, which rose from the sea in 1792. A reef of submerged rocks is said to extend to this island from Unmak, but



Mr. Dall found no bottom with 800 fathoms when on the line of this reef. The cable has been drawn to the northward of Bogoslov.

From Iliuliuk to Kyska Island the soundings are taken along the north shore of the Aleutian Islands, and are consequently irregular, the greatest depth being 1,755 fathoms off the Island of Kasatochu. From Tanaga Island to Kyska, a distance of 160 miles, no soundings have been taken.

The cable has been drawn to Kyska Island as it is reported to possess an excellent harbour perfectly protected from all winds, with good holding ground, a moderate depth of water, and a level floor of sandy mud. The island however is uninhabited.

If a second station is not required upon the Aleutians, the cable might follow the arc of the great circle from Iliuliuk to meet the deep sea soundings off Agattu. Judging from the soundings obtained in Behring Sea, less water might be found upon this track than along the shores of the Aleutian chain.

Soundings have been obtained westward of Tanaga, but they are to the southward of Amchitka, and the Rat Islands.

A line of soundings on the arc of the great circle above referred to would be extremely valuable. They could be easily obtained in the summer, by a trained officer, provided with Sir William Thomson's sounding machine, in one of Her Majesty's ships.

The other islands that afford facilities in the Aleutian group are Atkha, Amlia, and Adakh.

Atkha is the principal island of the group. 300 people were living here in 1867. Nazan Bay on the east, and Korovinsky on the west side were examined by Mr. Dall, but he does not report favourably on either. The contour of the south coast of this island, drawn for Admiral Lutke (see Lutke's voyages) by an intelligent native, shows several

deep bays and possible harbours, but there is no more reliable information; they have not been examined by sailors.

On the south side of Amlia Island, the island next eastward of Atkha, about 16 miles from the east end of Amlia, is the port of Svetchnikoff. In this bay soundings of from 16 to 5 fathoms were found over a sandy bottom. There is a village on the west end of Amlia.

Adakh, to the westward of Atkha, has a good harbour known as the Bay of Islands; this was examined by Mr. Dall, who speaks of "an excellent anchorage, with "good holding ground, and shelter behind what proved "to be an island forming part of an archipelago, which "closes the mouth of a very large and beautiful bay, known "as the Bay of Islands." A sketch of this anchorage was made. Adakh Island is uninhabited.

In 1867 there were 200 people living on Attu, the western island of the Aleutian chain.

From Kyska the cable is drawn to the southward to meet the line of deep sea soundings. Between Rat Islands and Agattu two shoal casts, of 303 and 332 fathoms, were obtained over a bottom of black sand. After passing the meridian of Agattu the ocean suddenly deepens, and in long.  $171^{\circ}$  E. the great depth of 4,037 fathoms was found; from this it shoals to 1,777 fathoms in  $167^{\circ}$  E., after which it gradually deepens to 3,754 fathoms.

The soundings then lie along the eastern shore of the Kurile Islands, depth varying from 317 to 1,445 fathoms. About 100 miles to the south-east of these islands very deep water is found; the soundings showing 4,041 and 4,655 fathoms.

Shoaler water may be found by sounding farther to the northward, between Attu Island and Kamchatka, towards Behring Island, but from the general nature of the bottom

in these regions, it is to be feared that a valley of over 3,000 fathoms must be crossed in taking a cable from the west end of the Aleutian Islands to the Asiatic Continent.

Akishi Bay, in Yezo Island, appears to form a favorable position for landing the cable. The bay is spacious, well sheltered, water not too deep, with a sandy floor, and has been well surveyed by Messrs. C. W. Ballie & Oldfield, of the English Naval Surveying Service.

There is a Japanese settlement here, consisting of 40 Japanese and 160 Ainos. Fish are abundant. Junks bring provisions in summer, and overland is a path to Hakodadi.

Should it be thought advisable not to land the cable at Akishi Bay, but to carry it on to Hakodadi, there will be no difficulties to be overcome. From Akishi Bay (by which the cable must pass) to Cape Yerimo, the south-east point of Yezo, the distance is 92 miles. A line of inshore soundings, 9 miles from the coast, show depths of from 50 to 60 fathoms; 30 miles from the coast no bottom could be found with 127 and 200 fathoms, while at 60 miles soundings were obtained in from 1,108 to 1,619 fathoms, mud and sand, and gravel and sand; 16 miles from Cape Yerimo there is 78 fathoms, fine sand.

From Cape Yerimo to Hakodadi, the distance is 120 miles, the soundings from 156 fathoms to no bottom at 350 fathoms. This stretch, if used, makes an addition of 212 miles to the original length, making the total distance, Barelay Sound to Hakodadi, 3,834 miles.

From a long personal experience in the North Pacific Ocean, gained during a service of over thirteen years, 1845 to 1859, in Her Majesty's discovery and surveying vessels as a navigating officer; having on six occasions crossed the Aleutian chain during passages made to and from Behring Strait, the Sandwich Islands, and the North-west coast of America; from having also made the passage to Behring's

Strait from the Sandwich Islands, westward of the Aleutian chain, calling at Petropaulski on the Asiatic coast; from having consulted the weather reports made by Mr. W. H. Dall, in Appendix No. 10, to his report of the Geographical and Hydrographical Explorations on the coast of Alaska, to the Government of the United States of America, in 1872 and 1873; from information obtained of the waters under consideration during the compilation of the present Admiralty Wind and Current Charts of the Pacific, Atlantic, and Indian Oceans; in fact, from my own varied experiences, and from information obtained from every available source, I am able confidently to report that the climatic difficulties to be encountered in laying this cable in the North Pacific, are not greater than those met with in the North Atlantic, where so many cables have been successfully laid.

Bad weather in both Oceans, Atlantic and Pacific, seems to be caused by the cold Arctic currents coming in contact with the warm streams from the south—the Gulf stream in the Atlantic, and the Kuro Siwo in the Pacific Ocean. But the volume of the Arctic stream in the Pacific is very much smaller than that in the Atlantic, and consequently the climatic disturbance is less; besides which, the cold current from Behring's Strait does not meet the warm waters of the North Pacific, until after passing the Aleutian chain, and in consequence there is comparative peace along the general route of the proposed cable to the northward of these islands.

There is one difficulty with respect to which the North Pacific is free: Icebergs are unknown, while in the Atlantic, icebergs and field ice, during a considerable portion of the year, are continually met with.

I would submit that more deep-sea soundings should be obtained, especially upon or near the arc of the great circle

from Iliuliuk to Agatu Island; also northward of a line between Attu Island and Cape Lopatka, in Kamchatka, towards Behring Island. By this means, shoaler water than that referred to by me in the foregoing part of the Report may be found, and by a slight détour, the valley that appears to lie between the Aleutian Islands and the Continent of Asia may be avoided.

(Signed) THOMAS A. HULL,

*Commander R.N.,*

*Late Superintendent of Admiralty Charts.*

Mamre, Honor Oak, S.E.,

London, 22nd August, 1882.

## APPENDIX No. 6.

OFFICIAL DOCUMENTS RELATING TO THE SCHEME OF  
MR. SANDFORD FLEMING FOR CONNECTING CANADA  
WITH ASIA BY SUBMARINE TELEGRAPH.*Submitted to the Canadian Parliament, 29th July, 1882.*

(RETURN 41.)

1. Letter from Sandford Fleming to  
Sir Charles Tupper .. .. 14th May, 1880.
  2. Report of the Chief Engineer of  
Railways in operation .. 20th May, 1880.
  3. Order in Council .. .. 17th June, 1880.
  4. Memorial to His Excellency the  
Governor-General .. ..
  5. Memorandum referred to in me-  
morial to His Excellency .. ..
  6. Letter to Secretary of State en-  
closing memorial .. ..
- } 27th June, 1880.
- 6½. Memorandum, Minister Public  
Works .. .. 2nd July, 1880.
  7. Order in Council .. .. 7th July, 1880.
  8. Letter to Sir Charles Tupper .. 22nd October, 1880.
  9. Letter from Department of Rail-  
ways and Canals to Sandford  
Fleming .. .. 4th November, 1880.
  10. Memorial to His Excellency the  
Governor-General .. .. 4th December, 1880.
  11. Order in Council .. .. 8th December, 1880.
  12. Department Public Works to  
Sandford Fleming .. .. 13th January, 1881.
  13. Earl of Kimberley to the Marquis  
of Lorne, Governor-General .. 4th December, 1880.
  14. Sir A. T. Galt to the Earl of  
Kimberley .. .. 2nd September, 1880.
  15. Colonial Office to Foreign Office 2nd September, 1880.
  16. Colonial Office to Foreign Office 1st December, 1880.
  17. Under-Secretary of State to the  
Minister of Public Works .. 28th December, 1880.

18. Department Public Works to  
Sandford Fleming .. .. 29th December, 1880.
19. Sir A. T. Galt to Secretary of  
State .. .. 9th December, 1880.
20. Copy of Telegraph to Charge d'  
Affaires at Yeddo .. .. 8th December, 1880.
21. Secretary of State to Minister of  
Public Works .. .. 20th December, 1880.
22. Sir A. T. Galt to Secretary of  
State .. .. 30th November, 1880.
23. Sir A. T. Galt to Secretary of  
State .. .. 2nd December, 1880.
24. Colonial Office to Sir A. T. Galt 1st December, 1880.
25. Earl of Kimberley to the Marquis  
of Lorne, Governor-General .. 18th December, 1880.
26. The Foreign Office to the  
Colonial Office .. ..
27. Memorandum by Sir Harry  
Parkes .. ..
- } 14th December, 1880.
28. Translation of Cypher telegram.. 21st December, 1880.
30. Under-Secretary of State to  
Minister of Public Works .. 10th January, 1881.
31. Sir A. T. Galt to Secretary of  
State .. .. 23rd December, 1880.
32. The Colonial Office to Sir A.T.Galt 22nd December, 1880.
33. Department of Public Works to  
Sandford Fleming .. .. 28th January, 1881.
34. Sandford Fleming to Department  
of Public Works .. .. 29th January, 1881.
35. Earl Kimberley to the Marquis of  
Lorne .. .. 25th January, 1881.
36. The Admiralty to the Colonial  
Office .. .. 18th January, 1881.
37. Sandford Fleming to the Minister  
of Public Works .. .. 4th February, 1881.
38. Department of Public Works to  
Sandford Fleming .. .. 10th February, 1881.



380. 39. Sandford Fleming to the Hon. H.  
L. Langevin .. .. 15th February, 1881.
30. 40. Sandford Fleming to the Minister  
of Public Works .. .. 23rd February, 1881.
0. 41. Sandford Fleming to the Minister  
of Public Works .. .. 2nd March, 1881.
80. 42. Sandford Fleming to the Minister  
of Public Works .. .. 10th March, 1881.
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